Could we use Thermite reactions to propel rockets?

Ad by Atlassian

Are you thinking about migrating to cloud?

Here's what you need to know about apps and the benefits of apps in cloud.

Read More

4 Answers

Sophia-Helene Mees de Tricht, Launch Licensure Consultant & Founding Partner, Pleiades Aerospace Services

Answered Jun 25, 2016 · Author has **5.8k** answers and **25.9m** answer views

No, because it doesn't detonate, it deflagrates and the combustion reaction is not violent enough to make a rocket work.

It's also a reductive oxidization (redox) process. Every thermite reaction starts with 5 molecules and ends with 4 plus a ridiculous amount of heat.

Which will cause the fluid medium (air) in the chamber to expand and eventually pressurized, but it's too slow a process to accelerate to m=1 at the nozzle throat. The energy released it's pretty awesome and it's great for melting tough metals, but not a good rocket fuel.

Plus, it is a pain in the ass to ignite.

656 views

Related Questions More Answers Below

Is it possible to use steam to propel a rocket?

Can nuclear propellant be used in a missile or rocket?

Why don't we make a nuclear propelled rocket?

Which one is used as propellants for rockets?

When is a solid rocket propellant used and when is a liquid one used? Why does the rocket LVM3 by ISRO use a solid rocket propellant?

James Stiles, studied at West Virginia University

Answered Feb 1, 2017 · Author has **534** answers and **240.4k** answer views

This is not exactly thermite, but ALICE rocket engines work using a very similar chemical reaction. An ALICE rocket engine basically consists of nanoparticles of Aluminum metal suspended in water ice. When the mixture is ignited, the aluminum nanoparticles oxidize using the oxygen from the water. This liberates hydrogen, which, along with the aluminum oxide nanoparticles, serves as the rocket's working fluid.

ALICE rocket fuel could easily be produced using materials available on the moon.

ALICE (propellant) - Wikipedia

1k views · View 1 Upvoter

Sponsored by Forge of Empires

If you enjoy city building and strategy, Forge is a must-play.

Build your unique empire through the ages and into the future in this award-winning game.

Play Now

Bracy Erin Harvey, Amateur Rocketeer and Aspiring Aerospace Engineer
Answered Jun 29, 2016 · Author has **255** answers and **187.4k** answer views

No, thermite reactions, although hot, don't produce any gases to expel so it wouldn't produce any thrust. You could theoretically use it to heat another working fluid like Hydrogen similar to how a nuclear thermal rocket works, but it'd be pretty inefficient. You could also add some organic matter to produce gas and some nitrates or perchlorates to increase the burn temperature, but at that point you're just making a normal solid rocket motor.

583 views · Answer requested by George Parsec

Richard Treitel, not a real rocket scientist but I know a few of them
Answered Jun 25, 2016 · Author has **4.5k** answers and **1.8m** answer views

Seems a bit more promising than powering a helicopter from a hamster on an exercise wheel. Seriously, one of the key figures of merit for a rocket propellant is the amount of energy released per unit mass. By what I can find out, that’s about 4 MJ/kg for thermite versus, oh, about 11 MJ/kg for methane burned with oxygen.